



IEEE CINCINNATI SECTION NEWSLETTER – OCT. 2009

OCTOBER MEETING

Unmanned Aerial Vehicles (UAVs)

DATE: Thursday, October 22, 2009
PLACE : Raffel's – 10160 Reading Road (see below for directions)
TIME : 5:30 p.m. to 6:00 p.m. - Social Time
6:00 p.m. to 7:00 p.m. - Dinner
7:00 p.m. to 8:30 p.m. - Presentation
COST FOR DINNER: \$10.00 per person – Regardless of Membership or Membership Grade!

NOTE: DINNERS ARE ALWAYS OPTIONAL - YOU MAY ATTEND THE PROGRAM ONLY.

MENU SELECTIONS: Baked Cod with Crab Topping, Hot Sliced Roast Beef in Gravy, Vegetable Cassoulet with White Beans en Gratin, Rice Pilaf, Red Skinned Mashed Potatoes, Vegetable Medley, Tossed Salad, Dinner Rolls and Butter, Assorted Cakes, Coffee, Tea, Iced Tea, Soft Drinks. There is also a bar available for the purchase of alcoholic drinks.

LOCATION: Raffel's is located at 10160 Reading Road, south of Glendale-Milford Road on the east side of Reading. Take I-75 to the Glendale-Milford Rd. Exit, go east on Glendale-Milford Road approximately ¾ of a mile to Reading Rd. and turn right on Reading.

RESERVATIONS: Please email Fred Nadeau for reservations at <mailto:fnadeau1@earthlink.net> (preferred) or call the Section Voice Mail at 513-629-9380 by **Noon, Tuesday, October 20, 2009** if you plan to attend. Please leave your Name, IEEE Member Number, and a daytime telephone number.

PE CREDITS: Depending on the subject matter, attendance at IEEE Cincinnati Section Meetings now qualifies the attendee for Professional Development Hours towards renewal of Professional Engineers Licenses. Required documentation will be available following the meeting! The Section Meetings also provide a great opportunity to network with fellow engineers in the area.

ABOUT THE MEETING: The meeting will feature a presentation on unmanned aerial vehicles (UAVs), and how the Department of Defense (DoD) is seeking "Terminator" like attributes in future combat aerial vehicles. Lt Col Kent Tiffany from Wright Patterson AFB will also cover a futuristic capability for a Homeland defense where multiple government agencies share systems, which seek net-centric based concepts. Lastly, he will discuss the air, ground and sea concepts for a futuristic integrated Army, Navy and Air Force in integrated manned and unmanned scenarios.

Lt Col Tiffany is currently assigned to the 303d AESG, Wright-Patterson AFB, Ohio as the Chief of Test, Global Hawk (UAV) program where he manages the flight test program at Edwards AFB, California. When he was deployed to the Middle East he supported flight operations in both Iraq and Afghanistan. Upon his return, he worked on UAV airspace issues for the DoD and Air Force working technology requirements and standards

for UAVs in how they would operate in the National Airspace. He has been an Aircraft Commander on KC-135R tanker and Mission Commander for Global Hawk UAV.

MEMBERSHIP NEWS

NEW MEMBERS

The following individuals are IEEE members who are new to our Section:

Jonathan Adam	John Mark Kennedy
Matt Batta	Aaron Knopp
Prabir Bhattacharya	John Kuhn
Boyan Dimitrov	Elliott M. Long
Ranran Ding	Hao Luan
Danh Do	Jorge Moscat Pardos
Mark Ferguson	Katrina Marshall Reffett
William Chad Hafer	Randy Schavel
Stephen Todd Hamblin	Samuel F. Slade
Kevin J. Haworth	Vignesh Subbian
Steven Hutchinson	Shawn Wilkening
Kyle Kauffman	

We wish to welcome these new members to the Cincinnati Section!!!

New Cincinnati Section Senior Member

The Cincinnati Section would like to congratulate our newest Senior Member,

J. David Jacobs

whose upgrade application was recently approved.

If you are interested in upgrading your membership to Senior Member, please contact any member of the Executive Committee. You can also see any member of the Executive Committee immediately following any Section Meeting.

Scanning the Past: A History of Electrical Engineering from the Past

Submitted by Bob Morrison, Editor

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John G. Brainerd and Project PX (ENIAC)

Fifty years ago this month, the PROCEEDINGS OF THE INSTITUTE OF RADIO ENGINEERS (IRE) included an article by John G. Brainerd on Project PX or ENIAC which had recently been completed at the University of Pennsylvania. The author had served as supervisor of the wartime project and was a professor of electrical engineering at the university. ENIAC was an acronym for Electronic Numerical Integrator and Computer and the article characterized it as a "mathematical robot" and "the first all-electronic general purpose computer." Brainerd mentioned that the machine occupied a 30 x 50 foot room and contained approximately 18,000 electron tubes. He explained that ENIAC had been conceived originally as a machine to solve ballistics

equations more quickly and accurately but was now being discussed "in connection with problems which were not even thought of when development began."

Brainerd was born in Philadelphia, PA, in 1904. He graduated in electrical engineering from the University of Pennsylvania in 1925. He joined the faculty immediately after graduation and later received a doctorate at Penn in 1934. In June 1929, he published a paper on the theory of the four-electrode vacuum tube in the PROCEEDINGS OF THE RADIO ENGINEERS (IRE). He was the author or coauthor of nine additional Proceedings papers between 1932 and 1940, mostly concerning network theory. Also, he was coauthor of a book entitled *High Frequency Alternating Current*, published in 1931. He served as chairman of a faculty committee appointed to supervise operation of a differential analyzer completed at Penn in 1934 with assistance from the Federal Emergency Relief Administration. This was an electromechanical machine similar in design to one constructed earlier at the Massachusetts Institute of Technology and used to solve differential equations more efficiently. During 1935-1936, Brainerd served as Assistant State Director of the Power Division of the Public Works Administration.

During World War II, Brainerd and his colleagues at the Moore School of Electrical Engineering at the University of Pennsylvania employed the differential analyzer in conjunction with a large team of human computers to solve ballistics problems for the Ballistics Research Laboratory of the Army Ordnance Department. In early 1943, John W. Mauchly, who had joined the Moore School faculty in 1941, drafted a brief memorandum proposing construction of a large digital electronic computer. Brainerd endorsed the proposal which was designated as Project PX with funding provided by a research and development contract from the Ordnance Department. Work began in June 1943 with J. Presper Eckert, Jr. as chief engineer, Mauchly as research engineer, and Brainerd as project supervisor. By the end of 1944, approximately 50 people were assigned to the project which was completed by early 1946 at a total cost of about a half million dollars. An official dedication ceremony for ENIAC was held February 15, 1946, and it was then turned over to the Ordnance Department. Brainerd and Thomas K. Sharpless, who had served as a research engineer on the project, were coauthors of a technical paper on the ENIAC published in *Electrical Engineering* in February 1948. (A reprint of this paper appeared in the PROCEEDINGS OF THE IEEE in September 1984.)

Brainerd later served as School Director of the Moore School of Electrical Engineering from 1954 to 1971. He was elected a Fellow of both the IRE and the American Institute of Electrical Engineers and received the IEEE Founder's Medal in 1975. He retired from the University of Pennsylvania in 1975 and served as President of the Society for the History of Technology during 1975-1976. He died in February 1988 at age 83.

A historical symposium celebrating the 50th anniversary of the ENIAC is scheduled to be held at the University of Pennsylvania on May 17-18, 1996.

*James E. Brittain
School of History, Technology and Society
Georgia Institute of Technology*

IEEE NEWS

IEEE-USA Unveils Digital Archives, Features Organization's Four Decades of Service

WASHINGTON (4 September 2009) -- IEEE-USA is building a digital archive featuring documents and photos of its 36-year history of promoting the careers and public policy interests of U.S. IEEE members. Part of the IEEE-USA History Project, the archive features:

- An overview of the first four decades of IEEE-USA from 1973-2009
- A listing of IEEE-USA's leaders from 1973 to date, including photos of boards of directors from 1998

- A detailed description of IEEE-USA's formation and its first 10 years (1973-1983), including an IEEE Spectrum special report on the constitutional referendum that added professional activities to the IEEE constitution
- A look at IEEE-USA growth and maturity from 1984-1999, with annual reports covering the 15-year period
- A glimpse of IEEE-USA in the 21st Century from 2000-present, including annual reports from 2002-2008, years in review from 2005-2008, and program handbooks for 2007-2008
- Program histories, including IEEE-USA's Student Professional Awareness Conferences (S-PACs)

John Meredith, IEEE-USA's 2007 president, is leading the IEEE-USA History Project. Meredith chaired the 2009 IEEE Conference on the History of Technical Societies, in Philadelphia from 5-7 August, and made a presentation on IEEE-USA history.

To view the digital archive, go to <http://ieeusa.org/about/history/index.html>.

The Bullet Train Milestone is a Commemorative Coaster

The technological innovation Tokaido Shinkansen (Bullet Train), an IEEE Milestone sponsored by the IEEE Tokyo Section of Region 10 and an American Society of Mechanical Engineers (ASME) Landmark, is being commemorated as a limited edition coaster.

The Bullet Train, which began service in 1964, is considered the world's first high speed train. The Bullet Train set a world record operating at speeds up to 210km/hr when it first began service in 1964. This historic engineering achievement, designed with the world's most advanced electrical and technological train technologies, pioneered high speed railway transportation around the world. What started as a 500km route between Tokyo and Osaka has since expanded to a 2,459km network linking most major cities on Honshû and Kyushû.

To celebrate this important milestone, individuals who donate US\$100+ to the IEEE Life Members Fund (LMF) from October 2009 to September 2010 will receive the limited edition pewter coaster depicting Tokaido Shinkansen. The Bullet Train coaster is the third in a series of six limited edition pewter coasters commemorating various historic IEEE Engineering Milestones. One coaster will be given per donor, per year.

The LMF provides grants to new and ongoing projects that are beneficial to potential engineers and engineering students. Your gift will both preserve the memory of the Tokaido Shinkansen engineering achievement, and support future technological innovations. To receive your limited edition Bullet Train IEEE Milestone coaster, make a donation of US\$100 or more to the IEEE Foundation/LMF today at www.ieee.org/donate.



IEEE-USA and IEEE Computer Society Teaming Up to Develop Professional Exam for Software Engineering

WASHINGTON (10 September 2009) -- IEEE-USA and the IEEE Computer Society will be working together to develop an examination requested by state licensure boards for prospective use in licensing software engineering professionals.

The National Council of Examiners of Engineering and Surveying (NCEES) approved the development of a Principles and Practice of Engineering examination -- PE exam -- for software engineering in August. NCEES develops and administers the engineering and surveying competency exams used for licensing purposes in all U.S. jurisdictions.

NCEES had received requests for the software engineering exam from engineering licensure boards in 10 states, a requirement that must be met prior to beginning the development of a new exam. These boards contend that because software engineers play a significant and ever-increasing role in the design and operation of safety-critical systems, they should be regulated in the same manner as other engineering disciplines. Projects affecting public safety require licensed engineers to verify that the engineering was done properly.

Software engineers agree. Nearly two-thirds (62.9 percent) of respondents to a September 2008 survey of software engineers conducted by the Computer Society said that they should be licensed if they practice in areas affecting public health, safety and welfare. In addition, 61.5 percent supported development of a path to software engineering licensure through the NCEES Model Law.

The Computer Society has been laying the foundation for greater professionalism in the software engineering field with "The Guide to the Software Engineering Body of Knowledge," or SWEBOK (<http://www2.computer.org/portal/web/swebok>), a 2004 guide that established a baseline for knowledge in the field and is now being updated. Under the new ISO/IEC 24773 standard approved in October 2008, all software certifications must conform to SWEBOK. The Computer Society's two certifications -- the entry-level Certified Software Developer Associate credential and the mid-career Certified Software Developer Professional credential (<http://www2.computer.org/portal/web/getcertified>), are the first two certifications that conform to the new ISO/IEC 24773 standard.

NCEES expects the software engineering PE exam to take between 24 and 30 months to develop. The Computer Society, NCEES, the National Society of Professional Engineers, IEEE-USA and the Texas Board of

Professional Engineers will share the cost of developing and maintaining the exam, and will provide subject matter experts to help develop it.

IEEE/IEEE-USA Seek Nominations for 2010 "New Faces of Engineering" Recognition Program
WASHINGTON (11 September 2009) -- It's time to nominate a younger engineer to be the IEEE/IEEE-USA's 2010 "New Face of Engineering."

The Engineers Week (EWeek) "New Faces of Engineering" program recognizes engineers new to the profession with outstanding educational and career accomplishments. The program is open to IEEE members worldwide.

"New Faces" is designed to promote the importance of technical education, celebrate engineering careers and recognize significant contributions to the engineering profession and society. Each year, the EWeek Web site (www.eweek.org) features the photos and biographies of five notable young engineers from each EWeek sponsoring society. Each society's top nominee is recognized during EWeek in a full-page ad in USA Today.

EWeek 2010 is 14-20 February.

To be eligible for recognition, engineers must be 30 or younger as of 31 December 2009, have a degree in engineering from a recognized U.S. college or university or equivalent international educational institution. Degrees in engineering technology, science, computer science and similar disciplines do not qualify; a degree in computer engineering is acceptable. Nominees must be a member of a sponsoring EWeek partner.

Judges will evaluate nominees based on their educational attainment, engineering achievements and participation and accomplishments in professional and technical society activities. Particular consideration is given to work (e.g. volunteering, publishing, conference presentations) in IEEE technical societies.

IEEE nominations can be submitted through IEEE regional directors, section and GOLD chairs, or independently, and should be directed to Helen Hall at h.hall@ieee.org. Self-nominations are not permitted. The nomination form and more information are available at <http://www.ieeeusa.org/communications/eweek/newfaces/default.asp>.

The deadline for all IEEE nominations is 13 October 2009.

The "New Faces of Engineering" program was the American Society of Heating, Refrigerating and Air Conditioning Engineers' legacy project for EWeek 2003. The program is now in its eighth year. Among the IEEE/IEEE-USA's "New Faces" were Deborah Zwitter, IBM Corporation (2003); Dr. Mark Hersam, Northwestern University (2005); and Dr. Carlos Cordeiro, Philips Research North America (2007).

Sponsored by more than 100 engineering, science and education societies, as well as major corporations dedicated to increasing public awareness and appreciation of engineering, EWeek is celebrated annually by thousands of engineers, engineering students, teachers and leaders in government and business. The IEEE served as lead society during EWeek 1993 and 2004.

The ExxonMobil Corporation and the American Society of Civil Engineers are serving as EWeek 2010 co-chairs.

IEEE-USA E-Book Reaches Out to Unemployed Engineers
WASHINGTON (16 September 2009) -- "The Best of Today's Engineer on Career Survival," available from IEEE-USA E-Books, is a compilation of articles designed to assist engineers who need help searching for a new

job, getting in the front door, maintaining their competitiveness and managing their finances while they search. The e-book contains such titles as:

- What Are Engineering Employers Looking For?
- Converting Gatekeepers to Greeters
- Picking a Good Boss
- Building Your Network Purposefully -- Before You Need a Job
- Seeking a New Job? Think Like an Employer
- Cold Calling Your Way to a New Job
- Transitioning Jobs, Managing Your Finances
- Five Steps to a New Job
- Jump Start Your Job Search
- Globalization and Your Career: Building Career Resilience
- Successful Career Makeover for Engineers in the 21st Century
- Sine Qua Non: Networking
- Finding Employment in an Economic Downturn
- Six Ways to Maximize Job Search Success

You can purchase your copy of "The Best of Today's Engineer on Career Survival" at www.ieeeusa.org/communications/ebooks for the IEEE member price: \$4.95. Nonmember price is \$19.95.

IEEE members can purchase other IEEE-USA E-Books at deeply discounted member prices -- and download some free e-books at www.ieeeusa.org/communications/ebooks.

\$5,000 in Scholarship Awards to Be Presented in 2009-10 IEEE-USA Online Engineering Video Competition on 'How Engineers Make a World of Difference'

WASHINGTON (17 September 2009) -- IEEE-USA is launching the organization's third online engineering video competition for undergraduate students on "How Engineers Make a World of Difference." IEEE-USA will present four scholarship awards totaling \$5,000 to undergraduates who create the most effective 90-second video clips reinforcing for an 11-to-13-year-old audience how engineers improve the world. Entries must be submitted through YouTube by midnight Eastern Time on Friday, 15 January 2010. Winning entries will be announced and shown during Engineers Week, 14-20 February 2010.

Entries in the 2009-10 competition should provide an individual profile of an engineer and how he or she makes "a world of difference." Entries will be judged on their effectiveness in reaching the target audience by portraying engineers as "real people" who seek to make life better, as well as on their originality, creativity and entertainment value.

First prize is: \$2,000; second prize, \$1,500; and third prize, \$1,000. The first-place winner will also receive up to \$1,000 to cover travel expenses to receive his/her award at the IEEE-USA Annual Meeting in Nashville, Tenn., on 6 March 2010.

Further, a special award for \$500 will be presented for the most innovative and effective showing of a video entry to a "tweener" target audience. This could involve presenting the video entered in the competition at a university engineering expo for K-12 students, in a middle school classroom, with a scout group, or in another setting with 11-to-13-year-olds.

For the first time, the video competition is open to all U.S. undergraduate students regardless of academic discipline. However, at least one undergraduate participant must be an IEEE student member. For the third

consecutive year, the competition will be judged by two engineering graduate Ph.D. students, Andrew Quecan and Suzette Aguilar; and by Nate Ball, engineer-host for PBS' "Design Squad."

For more information on how to enter the IEEE-USA Online Engineering Video Scholarship Competition and to upload an entry on YouTube, visit http://www.ieeeusa.org/communications/video_competition.

Information on how to become an IEEE student member is available at <http://www.ieee.org/web/membership/join/join.html>.

IEEE-USA President Endorses National Innovation Strategy

WASHINGTON (22 September 2009) -- IEEE-USA President Gordon Day said today that he strongly endorses the "Strategy for American Innovation" released by the White House and discussed by President Barack Obama in a speech yesterday at Hudson Valley Community College in Troy, N.Y.

"IEEE-USA recognizes the vital role that science and technology research and development plays in ensuring U.S. competitiveness, energy independence and national security," Day said. "We are very encouraged by the president's commitment to catalyze breakthroughs in cutting-edge technologies such as clean energy, advanced vehicle technology and information technology for use in health care. Investments in these critical areas will create jobs, spur U.S. prosperity, help reduce greenhouse gases, enhance national security and save lives."

The innovation strategy focuses on three major areas: investing in the building blocks of American innovation; promoting competitive markets that spur productive entrepreneurship; and catalyzing breakthroughs for national priorities (see http://www.whitehouse.gov/assets/documents/sept_20_innovation_whitepaper_final.pdf).

Obama's remarks are available at http://www.whitehouse.gov/the_press_office/Remarks-by-the-President-on-Innovation-and-Sustainable-Growth-at-Hudson-Valley-Community-College/.

IEEE Green Technology Conference Seeks Technical Papers

WASHINGTON (23 September 2009) -- Organizers of the second IEEE Green Technology Conference (<http://www.ieeegreentech.org>) are seeking technical papers on topics related to current and emerging renewable energy sources and energy-reduction technologies.

Accepted papers will be presented during the conference, 15-16 April at the Gaylord Texan Hotel and Convention Center in Grapevine, Texas, between Dallas and Fort Worth. They will also be published in a conference proceedings CD and available through the digital library IEEE Xplore (http://ieeexplore.ieee.org/guide/g_oview_faq.jsp).

Contributed papers in the following areas are solicited:

- Alternative energy sources for homes, businesses and communities, including wind, solar and bio-fuels
- Energy resource usage reduction, conservation and efficiency, including electric grid, home automation and commercial building energy management
- Alternative energy choices, large and small, and their effects in product development
- Green requirements, specifications and emerging standards and certifications
- Architectural and engineering sustainable designs, including the use of green building components
- Environmental, economic, political and social impacts of "going green"
- Indoor and outdoor environmental use, impacts and quality

To submit a paper, which must be received by 2 November 2009, go to <http://www.ieeegreentech.org/TechConf/PaperSubmission.htm>. Submissions must describe original work not previously published or currently under review for publication in another conference or journal. Go to http://www.ieee.org/portal/cms_docs/pubs/confpubcenter/pdfs/samplems.pdf for instructions. Authors will be notified by 15 December 2009 whether their papers are accepted. For questions regarding paper submissions, contact Edward L. Safford, technical program chair, at e.safford@ieee.org

Proposals for workshops, panels and tutorials are also welcome.

With increasing concerns about fossil fuel costs, supplies and emissions, scientists, engineers and entrepreneurs are more closely examining the commercial viability of renewable energy sources. These include solar, wind, nuclear, geothermal, hydro and biomass, among others, as well as alternative vehicle power sources such as fuel cells, gasoline and liquid natural gas electric hybrids and plug-in hybrid electric vehicles. The conference aims to look at these technologies.

The inaugural IEEE Green Technology Conference was held in Lubbock, Texas, in April. For an overview of the event, see Patrick Meyer's June article in IEEE-USA Today's Engineer: <http://www.todaysengineer.org/2009/Jun/Green-Tech.asp>. Meyer is a doctoral student and research associate at the University of Delaware's Center for Energy and Environmental Policy.

The 2010 IEEE Green Technology Conference is sponsored by IEEE Region 5, the IEEE Financial Advantage Plan, the IEEE Fort Worth Section and IEEE-USA. The event will precede the annual IEEE Region 5 Meeting.

Science, Engineering, Math Featured in Fall TV Shows

WASHINGTON (25 September 2009) -- For years, those trying to interest children in science, technology, engineering and mathematics (STEM) have complained about a lack of sci-tech TV shows. Network TV executives took notice.

The new fall broadcast TV lineup includes so many STEM-related shows that the current issue of "IEEE-USA Today's Engineer" (<http://www.todaysengineer.org/>) includes a top 10 list. One of these is "NUMB3RS," which makes its season premiere tonight on CBS.

"NUMB3RS" features FBI agent Don Eppes (Rob Morrow), who enlists the help of his mathematical-genius younger brother Charlie (David Krumholtz) to help solve some of the agency's more-challenging crimes. The younger sibling is able to discern mathematical patterns in criminal activity and use calculations that assist FBI investigators.

Dylan Bruno, who plays agent Colby Granger, graduated from MIT in 1993 with a degree in environmental engineering.

The top 10 list includes Heroes (NBC), Bones (FOX) and Shark Tank (ABC). So check out the list at <http://www.todaysengineer.org/2009/Sep/STEM-TV.asp> and see what show is No. 1.

The latest issue of "Today's Engineer" also includes an article on getting noticed in the competitive job market ("Why Haven't I Been Hired Yet?") and the approval of a licensing exam for software engineers ("Software Engineering PE Examination Development Approved").

The IEEE Cincinnati Section Executive Committee **Member Names and Phone Numbers**

Cincinnati Section Voice Mail

Section Web Page

Charlie Nash - Chair

Steve Olenick - Vice-Chair

Brian J. Resnick - Treasurer

Marwan Nusair - Secretary

Marc A. Bell - Member-At-Large

Laurie Tappel - Member-At-Large

Fred Nadeau - Arrangements Chair

Jim Everly - Student Activities

Frank Zhou – Membership

Jing-Huei Lee - EMBS Chapter
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Bob Morrison - Newsletter Editor

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